

# A REMARKABLE NEW SPECIES OF THE TROPIDOCEPHALINE PLANTHOPPER GENUS *EPEURYSA* MATSUMURA (HEMIPTERA, FULGOROIDEA, DELPHACIDAE), WITH AN IDENTIFICATION KEY TO ALL SPECIES FROM CHINA

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**Abstract** *Epeurysa divaricata* sp. nov. is described and illustrated from China, Hainan Province. A key to the Chinese *Epeurysa* species is provided. The specimens used in this study are deposited in the Entomological Museum, Northwest A & F University, Yangling, Shaanxi, China (NWAUFU) and Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (MNHB).

**Key words** Fulgoromorpha, Delphacinae, Tropidocephalini, *Epeurysa*, Palaearctic and Oriental Region.

## 1 Introduction

The delphacid genus *Epeurysa* (Hemiptera, Fulgoromorpha, Delphacidae) was established by Matsumura (1900) monotypically with *E. nawai* Matsumura from Japan. After erroneous synonymization with *Eurysa* Fieber by various authors (still in Nast, 1972) and (as a separate genus *Epeurysa*) a placement in the tribe Delphacini Muir (e. g. Metcalf, 1943; Fennah, 1971) it was finally transferred to the tribe Tropidocephalini by Fennah (1975) and Anufriev (1977). Except for the type species which occurs in the Palaearctic Region, all other species are widely distributed in the Oriental Region. Currently, 13 species have been described (Matsumura, 1900; Distant, 1906; Muir, 1919; Huang & Ding, 1979; Asche, 1983; Yang & Yang, 1986; Yang, 1992; Chen & Jiang, 2000; Chen & Ding, 2000), 10 of them are known to occur in China (*E. abatana* Asche, *E. distincta* Huang & Ding, *E. infumata* Huang & Ding, *E. jiangjinensis* Chen & Jiang, *E. maculata* Yang & Yang, *E. nawai* Matsumura, *E. nengkaoensis* Yang, *E. remanei* Asche, *E. sinobambusae* Yang & Yang and *E. subulata* Chen & Ding). In this paper we add one new species from Hainan Province, and provide a key to all Chinese *Epeurysa*-species.

## 2 *Epeurysa* Matsumura, 1900

*Epeurysa* Matsumura, 1900: 261. Type species: *Epeurysa nawai* Matsumura, 1900, by original designation.

*Upachara* Distant, 1906: 469. Type species: *Upachara stigma* Distant 1906, by monotypy; synonymized by Fennah, 1975.

**Diagnosis.** Medium-sized, brown to orange delphacids. Vertex short and broad, nearly or less

than half width at base, anterior margin of vertex rounded, fastigium obtusely rounded, Y-shaped carina distinct, submedian carinae present. Frons in midline subequal or a little longer than wide at widest part, median carina simple or forked at extreme base. Antennae cylindrical, short. Post-tibial spur thick, without teeth on lateral margin. Male pygofer smooth or with 3 processes on the midventral margin. Aedeagus with phallobasal process comprising or lacking a node near apex, phallus tubular, simple, apex curved. Genital diaphragm membranous and open. Parameres with inner basal angle produced. Male anal segment ring-like, laterodistal angles each produced into a process at each side.

**Distribution.** China (Shaanxi, Gansu, Jiangsu, Anhui, Zhejiang, Jiangxi, Hunan, Hubei, Fujian, Taiwan, Guangdong, Guangxi, Hainan, Sichuan, Guizhou, Yunnan, Chongqing) (Ding, 2006; Chen *et al.*, 2000); Russia (Anufriev, 1977), Japan (Matsumura, 1900; Ishihara, 1949; etc.), Philippines (Asche, 1983), Nepal (Asche, 1983), Sri Lanka (Distant, 1906), Malay Peninsula (Muir, 1919).

**Remarks.** In the tribe Tropidocephalini, the genus *Epeurysa* is mostly similar to the genus *Mucillnata* Qin & Zhang (2010) in body appearance and in the configuration of the male genitalia. However, *Epeurysa* differs from *Mucillnata* in having the lateral carinae of the vertex slightly concave medially, apically nearly as wide as basally (in *Mucillnata* the lateral carinae of the vertex strongly converging towards apex, distinctly narrower at apex than at base); submedian carinae of

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vertex present, transition from vertex to frons rounded (in *Mucillnata* the submedian carinae absent, transition from vertex to frons with distinct transverse carina); the male pygofer smooth or with 3 medioventral processes (in *Mucillnata* with single median process on the ventrocaudal margin); the parameres with the inner basal angles produced (in *Mucillnata* the inner basal angles not produced); the male anal segment with laterodistal angles produced in two separated processes (in *Mucillnata* the caudoventral margin produced in to a single process).

#### Key to species of *Epeurysa* Matsumura in China (males).

1. Head including eyes distinctly broader than pronotum; phallobasal process without a node apically ..... *E. divaricata* sp. nov.  
Head including eyes narrower or as wide as pronotum; phallobasal process with a node apically ..... 2
2. Distal limb of phallobasal process short and scale like ..... 3  
Distal limb of phallobasal process long, not scale like ..... 5
3. Medioventral processes with the median one tooth-like, tapering apically, in ventral view higher than lateral ones; median carina of frons obsolete at base ..... *E. subulata* Chen & Ding  
Medioventral processes with the median one rounded apically, in ventral view at the same level as lateral ones; median carina of frons distinct at base ..... 4
4. Tegmina with dark markings; paramere with outer distal angle acuminate and directed laterad ..... *E. maculata* Yang & Yang  
Tegmina without dark markings; paramere with outer distal angle not pointed ..... *E. sinobambusae* Yang & Yang
5. Medioventral processes with the median one expanded and apically truncate ..... *E. jiangjünensis* Chen & Jiang  
Medioventral processes with the median one not expanded, or if expanded, not apically truncate ..... 6
6. Male pygofer in ventral view with lateral margin higher than level of

- medioventral processes ..... *E. distincta* Huang & Ding  
Male pygofer in ventral view with lateral margin lower than level of medioventral processes ..... 7
7. Paramere transversely expanded apically, anterior margin truncate or subtruncate ..... 8  
Paramere not as above ..... 9
8. Paramere with a distinct small projection at inner margin .....  
..... *E. nawai* Matsumura  
Paramere without distinct small projection at inner margin .....  
..... *E. infumata* Huang & Ding
9. Medioventral processes with lateral ones shallowly emarginated at outer margin, steeply emarginated at inner margin .....  
..... *E. abatana* Asche  
Medioventral processes with lateral ones steeply emarginated at outer margin, shallowly emarginated at inner margin ..... 10
10. Medioventral processes with the median one dilated and apically rounded ..... *E. remanei* Asche  
Medioventral processes with the median narrowed and apically truncate ..... *E. nengkaoensis* Yang

#### 3 *Epeurysa divaricata* sp. nov. (Figs 1 – 15)

**Description.** Body length. Male (macropterous) 1. 65 – 1.74 mm, including tegmen 2. 70 – 2.89 mm; female (macropterous) 2. 29 – 2.46 mm, including tegmen 3. 12 – 3.28 mm.

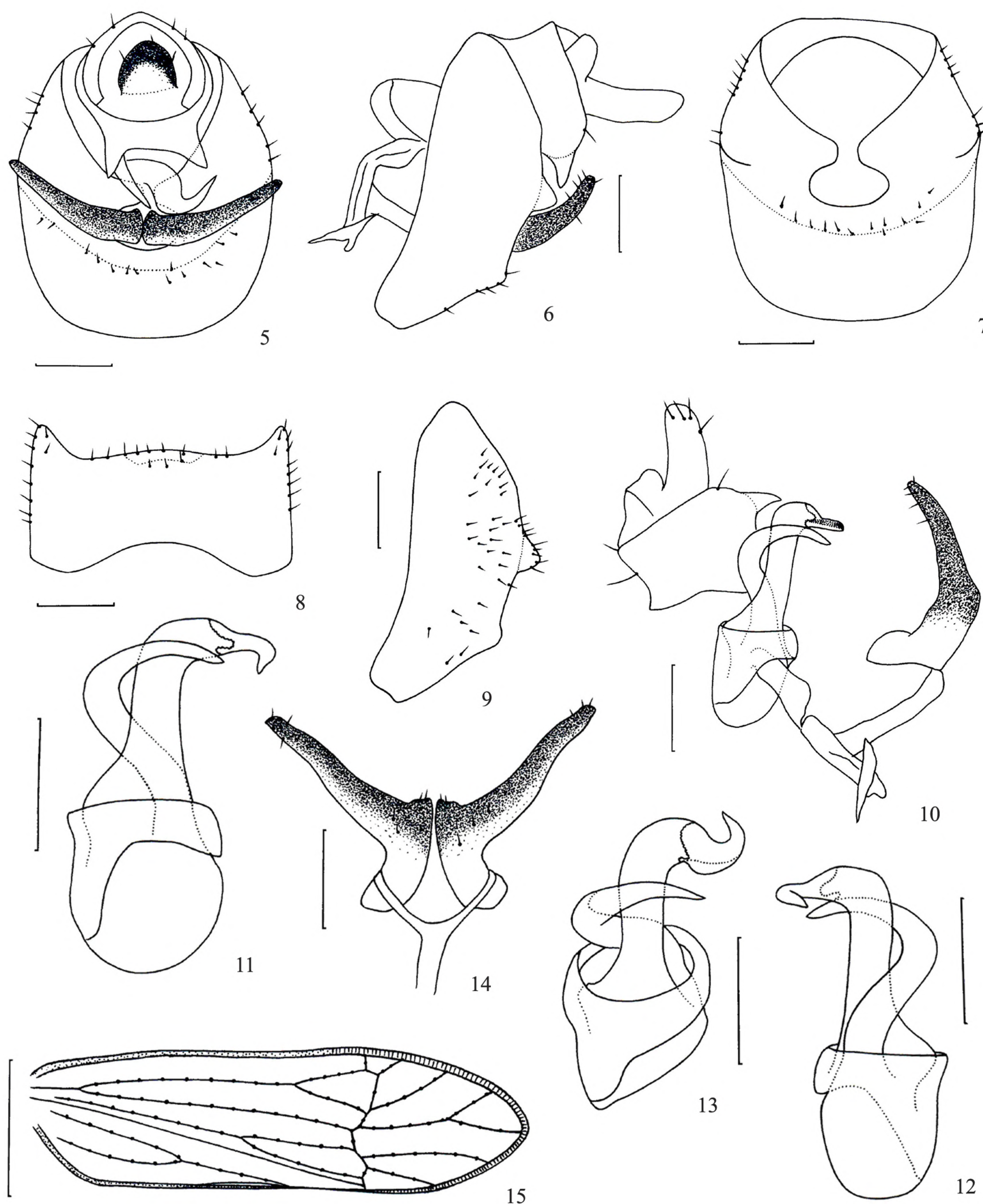
**Colouration.** General color brownish orange. Basal compartment of vertex with a small orange patch at each side. Eyes red with brown patches basally. Tegmina subhyaline. Male pygofer yellowish. Parameres mostly black. Ovipositor greyish brown.

**Head.** Short and wide, including eyes broader than pronotum (about 1.00:0.91) (Figs 1, 4), profile



Figs 1 – 4. *Epeurysa divaricata* sp. nov. 1. Female habitus (macropterous), dorsal view. 2. Same, left lateral view. 3. Head, ventral view. 4. Head and thorax, dorsal view. Scale bars: 1 – 2 = 1.0 mm, 3 – 4 = 0.5 mm.





Figs 5 – 15. *Epeurysa divaricata* sp. nov. 5. Male genitalia, caudal view. 6. Same, left lateral view. 7. Male pygofer, caudal view, anal segment, aedeagus and parameres removed. 8. Same, ventral view. 9. Same, left lateral view. 10. Anal segment, aedeagal complex and parameres, left lateral view. 11. Aedeagus, left lateral view. 12. Same, right lateral view. 13. Same, in different position. 14. Parameres, caudal view. 15. Forewing. Scale bars: 5 – 14 = 0.1 mm, 15 = 0.5 mm.

of transition of vertex to frons rounded (Fig. 2). Vertex in dorsal view about 2.2 times wider at base than medially long, slightly narrower at apex than at base (about 0.83:1.00), anterior margin rounded, slightly projecting in front of eyes, lateral carinae concave, apically slightly diverging to frons (Figs 1, 4); submedian carinae of vertex originating from near middle of lateral carinae, carinae of vertex at apex and median carina of frons at base obsolete (Figs 1, 3,

4); Y-shaped carina distinct, areas of basal compartments shallowly concave (Figs 1, 4). Frons fairly broad, slightly longer in midline than its maximum width (about 1.1:1.0), widest at middle level of frons, at apex distinctly shorter than at base (about 0.73:1.00), lateral frontal margins distinctly convex, median carina more conspicuous except for the basal portion (Fig. 3). Rostrum reaching between mesotrochanters. Postclypeus at base as broad as frons



at apex, less than half the length of frons (about 0.45 : 1.00) and ca. 1.70 times longer than anteclypeus, median carinae well defined, post- and anteclypeus together approximately  $0.90 \times$  length of frons. Antennal joints cylindrical, short, slightly surpassing frontoclypeal suture, segment I almost as long as wide at apex, shorter than II about 1.0 : 2.5 (Figs 2, 3).

Thorax. Pronotum slightly longer than vertex in midline (about 1.25 : 1.00), lateral carinae slightly sinuate, not attaining hind margin (Figs 1, 4). Mesonotum medially ca. 1.6 times longer than vertex and pronotum together, median carina obsolete and apically vanishing, lateral carinae straight, slightly diverging caudad, not attaining posterior margin (Figs 1, 4). Tegmina in macropterous male 2.27 – 2.39 mm and in female 2.50 – 2.65 mm long, surpassing tip of abdomen nearly one third of its total length. 3.40 times longer than wide at maximum, widest at level of nodal line (Figs 1, 2, 15). Hind tibiae 0.59 – 0.72 mm long, slightly longer than post tarsi together, bearing 2 lateral teeth on outer edge and 5 teeth at apex (grouped 2 at inner side and 3 at outer side), metabasitarsus distally with 6 black teeth in a transverse row, tarsomere II with 4 teeth, metabasitarsus (0.23 – 0.29) slightly shorter than tarsomere 2 (0.11 – 0.13) + 3 (0.17 – 0.21) combined, post-tibial spur (0.17 – 0.19) slightly shorter than metabasitarsus, solid, without teeth on interior margin but with a small apical tooth.

Male genitalia. Male pygofer rounded in caudal aspect, ventrocaudal margin smooth, without process on the medioventral margin (Figs 5 – 9), in lateral view laterodorsal angle not produced caudad, posterior margin produced with a triangular lobe-like structure near middle (Figs 6, 9). Diaphragm narrow and open medially (Fig. 7). Parameres fairly long, contiguous at base, strongly diverging thence and surpassing level of lateral margins of pygofer, narrowing towards apex, inner basal angle slightly produced (Figs 5, 14). Aedeagus moderately long, phallus tubular, twisted, directed to left caudad, apically deflexed mid-ventrad, with tip acuminate, phallobasal process broader and longer than phallus, arising basally and directed caudad, lacking a node near apex, subapex cleft at left side with irregular teeth along the margin, distal limb hook-shaped, turned to right side, the widest part of phallobasal process near cleft slightly longer than the length of distal limb (Figs 10 – 13). Male anal segment with laterodistal angles widely separated, each produced ventrad a spine-like processes, unsymmetrical and sharply narrowing to pointed apices (Fig. 5).

Holotype ♂ (macropterous), China, Hainan Province, Bawangling, 15 May 2008, alt. 126 m, in

light trap, coll. MEN Qiu-Lei (NWAUFU). Paratypes: China, 1 ♂ (macropterous), same data as holotype (MNHB); 1 ♀ (macropterous), 12 May 2008, other same data as holotype (MNHB); 1 ♀ (macropterous), 30 Apr. 2008; 1 ♀ (macropterous), 2 May 2008, Hainan Province, Qixianling, coll. MEN Qiu-Lei, in light trap (NWAUFU); 1 ♂ (macropterous), Hainan Province, Bawangling, 25 May 1983, in light trap, coll. ZHANG Ya-Lin (NWAUFU).

Etymology. The name of the species alludes to the strongly divergent parameres.

Remarks. *Epeuryssa divaricata* sp. nov. should be assigned to the genus *Epeuryssa* Matsumura as it possesses the combination of characters: vertex short and wide, apically rounded (Figs 1, 4); the frons fairly broad, in midline the length nearly equal to the maximum width (Fig. 3); aedeagus with process of phallobase, phallus arising from base (Figs 10 – 13); genital diaphragm of pygofer open in middle (Fig. 7); parameres with inner basal angle produced (Figs 5, 14) and male anal segment ring-like with lateroapical angles produced (Fig. 5).

Externally, the new species resembles *E. straminea* (Muir, 1919) by its head being broader than the pronotum, but differs in general body color (brownish orange rather than stramineous in *E. straminea*), and in its body length (the female body 2.29 – 2.46 mm and tegmina 2.50 – 2.65 mm while in *E. straminea* the female body 2.7 mm and tegmen 2.8 mm). But any closer relationships cannot be judged at this stage as *E. straminea* is only known by a single female.

Distribution. Known only from the type locality in southern China (Hainan Province).

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## 短头飞虱属分种检索表并记中国一新种 (半翅目, 蜡蝉总科, 飞虱科)

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**摘要** 记述中国短头飞虱属 *Epeurysa* Matsumura 1 新种: 叉突短头飞虱 *E. divaricata* sp. nov., 编制了中国短头飞虱属分种检索表, 还提供了成虫外形照片及雄性外生殖器特征图。研究标本均分别保存在西北农林科技大学昆虫博物馆 (NWAUFU) 及德国洪堡大学自然博物馆 (MNHB)。

**叉突短头飞虱, 新种 *E. divaricata* sp. nov.** (图 1~15)

新种因其头部 (包括复眼) 宽于前胸背板而与 *E. straminea* (Muir, 1919) 近似, 区别在于新种体呈褐色 (后者为蒿黄色); 雌虫体长 2.29~2.46 mm, 翅长 2.50~2.65 mm (后者分别为 2.7 mm 和 2.8 mm)。由于 *E. straminea* 仅根据 1

头雌虫而建立, 因此, 新种与 *E. straminea* 的关系还有待于进一步研究。

正模 ♂ (长翅型), 海南坝王岭, 2008-05-15, 海拔 126 m, 灯诱, 门秋雷采 (NWAUFU)。副模: 1 ♂ (长翅型), 采集信息同正模 (MNHB); 1 ♀ (长翅型), 2008-05-12, 其它信息同正模 (MNHB); 1 ♀ (长翅型), 2008-04-30, 1 ♀ (长翅型), 2008-05-02, 海南七仙岭, 灯诱, 门秋雷采 (NWAUFU); 1 ♂ (长翅型), 海南坝王岭, 1983-05-25, 灯诱, 张雅林采 (NWAUFU)。

词源: 新种种名因其阳基侧突向两侧强烈叉开而定名。

**关键词** 蜡蝉次目, 飞虱亚科, 凹距飞虱族, 短头飞虱属, 东洋区和古北区。

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